The master's thesis „Lower extremity stabilization function assessment using inertial sensors and functional tests in women's american football players" adresses postural control assessment in terms of functional joint stability using inertial sensors.

The theoretical part is devoted to matters of functional joint stability, its control and it provides review of assessment options. Also inertial measurement unit function and application for human motion tracking are discussed. The last chapter covers American football considering the research group in the study.

The experimental part is in form of study, which uses inertial sensor-based parameters to evaluate functional joint stability that are placed on four body segments and the results are compared with functional test results. We evaluated one-legged stance and single-leg hop test. One-legged stance, bear position and squat were chosen for the functional tests. Obtained data were also discussed in the context of history of injury in the last two years.

Results confirm applicability of inertial measurement units for lower extremity stabilization objectification. We proved correlation of thight, shin and instep time to stabilization (TTS) with one-legged stance score and similarly thight and shin TTS with bear position score.